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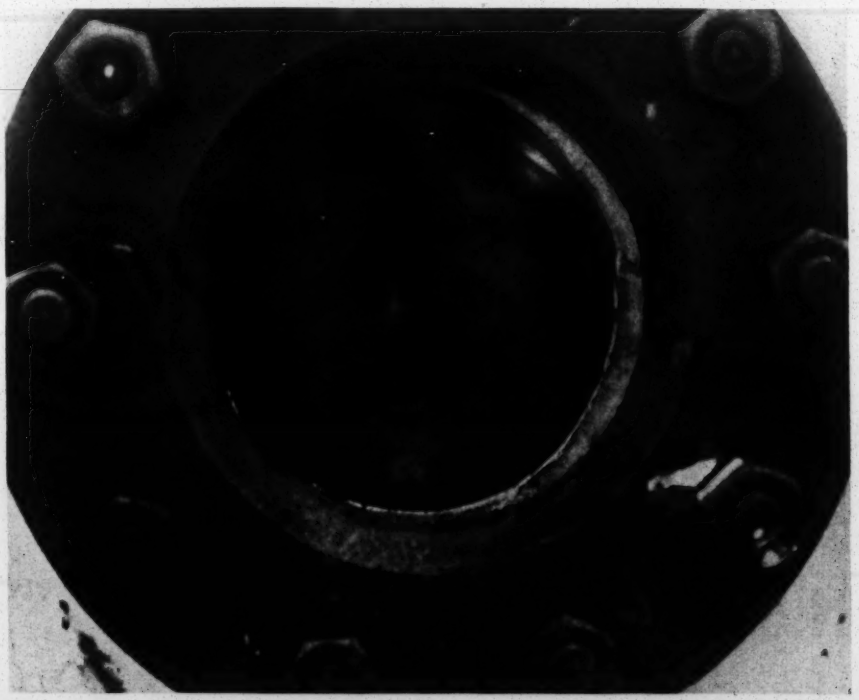

Photograph from William Beebe

A FISH-EYE'S VIEW OF AN EXPLORER

Dr. William Beebe peering through the thick quartz observation window of the Bathysphere. This summer, off Bermuda, Dr. Beebe and Otis Barton made two record dives under the auspices of the National Geographic Society and the New York Zoological Society (see Bulletin No. 1).

HOW TEACHERS MAY OBTAIN THE BULLETINS

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World's Record Deep-Sea Dives Made Off Bermuda

RECENT dispatches to the Washington, D. C., headquarters of the National Geographic Society state that Dr. William Beebe has completed his third season of deep-sea dives in the Bathysphere off Nonsuch Island, Bermuda. Nearly a score of fish, new to science, were observed and two new world's records for depth were established by this year's expedition, conducted under the joint auspices of the National Geographic Society and the New York Zoological Society.

Already holders of the record deep-sea dive, Dr. Beebe and Otis Barton took the Bathysphere to a depth of 2,510 feet on August 11. Their prior record was 2,200 feet. During this dive Dr. Beebe dictated by telephone to his associate, Miss Gloria Hollister, thousands of words of description about little known denizens of "a world as strange as Mars." Mr. Barton operated the special, high-powered light, a movie camera, and the scientific instruments.

After an hour at the record depth, during which Dr. Beebe reported that the searchlight showed many new forms of life swimming before the thick quartz eyes of the Bathysphere, and others could be observed owing to lights carried on their bodies, the order to haul up was given.

Flesh-Colored Fish Noted

Upon emerging, Dr. Beebe said, "I have never seen so much material in my life, and new material, too. Much of it is entirely different from that observed during previous dives. It is the silliest thing in the world to attempt to describe in a few words, but we saw more and larger fish than during any other dive.

"Every dive convinces me of the futility of trying to get the true idea of deep-sea life through dragging nets. Many deep-sea creatures are such rapid swimmers that they can easily get away from nets. One of the most amazing finds of the day was a flesh-colored fish which I observed at the 2,500-foot level. We observed schools of rare *Lampanyctus,* silver hatchet fish, and thousands of tiny squid."

On August 15, at almost the same spot as the former record dive, Dr. Beebe and Mr. Barton were lowered to 3,028 feet. The Bathysphere remained at that level for only five minutes—sufficient time, however, to make possible interesting scientific observations, which were dictated by telephone to the barge *Ready.*

Dr. Beebe reported that the pressure at the maximum depth was more than 1,300 pounds to the square inch, but the Bathysphere, used successfully on many previous deep-sea dives, showed no leakage. It took two hours and forty-six minutes to make the dive, two hours and forty-one minutes of which were spent in descending and ascending. The American flag and the flag of the National Geographic Society were carried on the cable above the sphere.

Some Fish Carry Lights

As in the former dive, fish and other forms of undersea life, some recognized on the previous dive, and others that were new even to Dr. Beebe and Mr. Barton, flashed into their vision as they peered through the Bathysphere windows. In this dark region, Nature has provided many of its creatures with lights which glitter around their bodies. Whether these lights are for the purpose of finding food or attracting mates is a problem which Dr. Beebe hopes to solve later.

At 2,750 feet, Dr. Beebe glimpsed "an amazingly large fish" which was about 20 feet long. He said this is probably the largest living thing ever seen in the depths of the sea. The movements of the huge mass of flesh could be followed

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Photograph from the Citroen Central African Expedition

MOTOR TIRES CUT A SWATH THROUGH AGE-OLD CARAVAN TRAILS IN THE SAHARA

Air lines and motorbus services are slowly penetrating this vast wasteland, once one of the most remote areas in the world. Adventurous motorists are reaching isolated oases to which camels were formerly the only means of transport (see Bulletin No. 3).

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Curaçao, a Waterless Bit of Holland in the Caribbean

CURAÇAO, the small but important island off the coast of Venezuela in the Caribbean Sea, is celebrating the 300th anniversary of its Dutch rule. One of the quietest and most peaceful bits of land in the Western Hemisphere thus recalls the rollicking, roaring, bloody days of the 16th and 17th Centuries, when the Spanish Main was a freebooter's paradise.

Ojeda, a friend of Columbus, discovered the island in 1499. He, like others since his time, was attracted to the island because of its fine harbor, one of the best in the West Indies. In the course of three centuries several great naval powers, at intervals, have tried to claim the harbor for their own.

Curaçao was given by the Spanish king to the governor of Venezuela in 1522, and some time afterward a Spanish settlement was established on it. The Dutch captured it in 1634, and it served, ten years later, as political training ground for Peter Stuyvesant, who afterward became governor of New Amsterdam (New York).

French and British Attacks

Curaçao suffered attacks in 1673 and in 1723, both times from the French. On the second occasion the French were driven out by the British, who remained in possession of the island for two years. After the Dutch regained control, Curaçao experienced other attacks from English warships, and the island was again under British control from 1805 to 1815.

Since the latter date the Dutch have been undisputed owners of the barren little isle; but there was at least a threat from an entirely different quarter in 1903, when German men-of-war put into Curaçao during their famous debt-collection demonstration against Venezuela. It was rumored that Germany dreamed of making the harbor a base for control of the West Indies.

In spite of a population more than half made up of negroes and mulattoes, and with considerable numbers of Jews, Spaniards and South Americans, Willemstad, the capital and chief city, is intensely Dutch in appearance. Dutch cleanliness has been successfully transplanted to this tropical site, and the main streets, gutters, sidewalks, and walls are spic and span. Only in some of the narrow alleys of the negro quarter is a lack of cleanliness to be noted.

Valuable as Trading Station

Curaçao is about 40 miles long by three to seven miles wide, and lies 41 miles off the coast of Venezuela. The island is quite dry and produces little. Practically all food is imported, and even drinking water is brought from the mainland for those who can afford it. Others, as is the case in Bermuda, drink rain water caught from the roofs and stored in cisterns.

The island's chief value is as a trading station. Lying just off the northern coast of South America, and controlled by a country famous for its efficient political and commercial methods, it makes an ideal distributing and transfer point between its wealthy, but sometimes disturbed, neighbors on the one hand, and Europe and North America on the other.

Willemstad harbor is shaped like a banjo, with a narrow neck for an entrance and a large circular basin for anchorage and wharf locations. The town is built on both sides of the narrow entrance channel and along the flanks of the basin.

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in the blackness by the luminescence of the thousands of small creatures it disturbed.

The Bathysphere, which bears the name of the National Geographic Society and the New York Zoological Society, is a steel ball four-and-one-half feet in diameter, with a shell one-and-a-half inches thick. It is too small to permit the two explorers to stand erect. Despite their close quarters, they are able to take photographs, and operate searchlights and motion picture cameras.

Also inside the Bathysphere was apparatus for purifying the air. Tanks of compressed oxygen released sufficient gas to renew the air every two minutes. The sphere also carried chemicals which absorbed and held the carbon dioxide and moisture exhaled by the divers. Because of the great depth and tremendous pressure, no air could be pumped into the sphere from the surface.

While one of the objects of the expedition was to go down a half-mile, it was not solely record depth that Dr. Beebe sought. Before, between, and since the two record dives, he and his aides have made many dives, in both the Bathysphere and with a diving helmet, to observe sea life at various depths.

During one dive with the helmet, in only 40 feet of water, Dr. Beebe had just shot a sharp-nosed puffer when a five-foot shark swooped down on the stunned fish. Dr. Beebe fought off the shark with the iron handle of a net he held in his hand, and obtained his specimen. Later the same day, he was interrupted in his observations by sharks, barracuda and a green moray eel, but none attacked him. On these dives he collected excellent specimens of beautifully and weirdly colored fish.

Note: A complete account of this year's dives, written by Dr. Beebe, and illustrated with color drawings of his new deep-sea finds, will be published in the December, 1934, issue of the *National Geographic Magazine*.

For supplementary reading and photographs see also: "A Wonderer under Sea," December, 1932; "Depths of the Sea," January, 1932; and "Round Trip to Davy Jones's Locker," June, 1931.

Bulletin No. 1, October 22, 1934.

Photograph from William Beebe

THE TELEPHONE IS A VITAL LINK

Miss Gloria Hollister, one of Dr. Beebe's associates, sent and received hundreds of messages during the dives this summer. It is agreed that something must be said at each end of the line every five seconds during the dives, in order that both parties will know that all is well. When communication is interrupted, those on deck have no means of knowing whether it is due to static or a fatal accident.

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Salt and Golf Clubs Needed on African Motor Tours

WHEN a group of South African adventurers announced recently that they were planning a motor trip through Africa, beginning at Cape Town and driving northward to the headwaters of the Nile, thence west and north across the Sahara Desert to Tangier, they directed attention to the slow but steady extension of highways, or at least passable tracks, in the heart of what is popularly called "the Dark Continent."

For a number of years occasional motor cars have been making the 5,000-mile run from Cape Town to Juba, at the head of navigation of the Nile, using two-thirds of the 8,000-mile Cape-to-Cairo dream of the late British empire-builder, Cecil Rhodes.

In 1930 a young South African and his wife covered the entire distance from the Cape to Cairo in 40 days, driving all but 1,000 miles of impassable Sudd morass, through which they ferried on a Nile steamer.

No Trip Yet for Casual Tourist

An African motor safari, however, is not yet a trip for the ordinary motorist or casual traveler. Rains may slow up cars to a speed of 300 yards in five days. Lions may come crawling up to watch the driver change a "flat." Rhinoceroses must be carefully avoided, because these clumsy, heavyweight beasts could easily put a car out of commission by charging the steering gear or gasoline tank, and perhaps injure passengers.

In Tanganyika and Kenya the route leads through an outdoor zoo; vast dusty plains thronged with elands, kongoni, antelopes, zebras, ostriches, giraffes, hyenas, hartebeest, and jackals. Unafraid of automobiles, herds graze peacefully while cars run close to their unfenced feeding grounds.

A certain driving technique must be mastered by operators of South African tours. Chauffeurs should learn to throw their cars into a skid when they run over large snakes in their path to be sure of killing the reptiles.

Salt To Get Out of Ruts!

Salt and golf clubs should have their place in the luggage of every motor traveler through Africa: salt to get out of ruts, golf clubs to while away stop-overs. Even such a village as Kasama, merely a jungle crossroads, populated by a handful of whites, has its golf course. The fairways are not as sporty, however, as those in Elizabethville, where 600 ant hills ranging from foot-stool size to young hills substitute for bunkers.

When the wheels spin and sink in the muck it is time to call for native help. Naked men, women and children will flock to aid the unfortunate motorist. With shouts and chants they will pull out a car. They will chop down trees and bushes to make a corduroy road over a wet spot (see illustration, next page). When the labor is over no reward pleases them more than a teaspoonful of salt apiece.

Africa's swift development has been dramatized by attempts to shorten the time of the overland journey between Cairo and Cape Town. The trek was first made in 1898 by Grogan, who traveled on foot with a small army of native porters. In 1913 the first attempt to go through by automobile failed when Captain Kelsey was killed by a leopard. Colonel van Ryneveld flew the route in 1920, although two machines were wrecked before he reached Cape Town. Now regular air service links Cape Town with Europe.

Airplanes and automobiles together are making Cecil Rhodes' dream of an all-red route through Africa an accomplished fact years before he or any of his disciples expected swift through transit could be established. He prophesied the day when trains would run from Cape Town to Cairo. It now seems probable that both surfaced roads and air stations will substitute for Rhodes' steel rails.

Cotton Fields and Dairy Farms!

From Juba, the best (which is still not too good) route south leads from the Nile to cotton-growing Soroti, on the banks of Lake Kioga; through Mbale under the slopes of Mt. Elgon; down into the trench of the Rift Valley at Naivasha, where Europeans are introducing dairy farming.

Snow-capped Mt. Kenya, some 17,000 feet high, pierces the horizon during the last part of the 776-mile, five-day jaunt into Nairobi, capital of Kenya Colony. With a white population of over 7,000 Nairobi has, nevertheless, organized an automobile association largely responsible for the development of the road system in British East Africa.

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A pontoon bridge crosses the channel and is swung aside to permit the passage of ships.

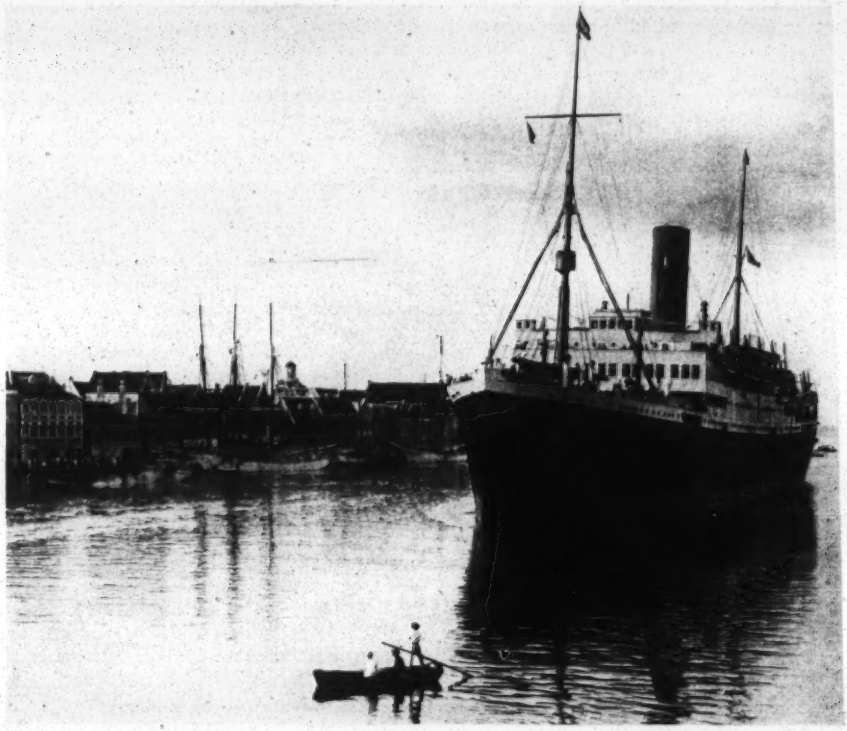
A side-light on the town's population is furnished by the tolls charged on this bridge. "Persons wearing shoes" pay four-fifths of one cent, "persons without shoes," two-fifths of one cent, for each passage.

The well-to-do Dutch of Curaçao make the gesture of keeping country places on the barren stretches outside the city, but few plants other than cacti and aloes can be coaxed into growing throughout most of the island. The several ostrich ranches fit better into the picture. Fine, strong birds are grown and are sold to zoos and circuses, or for breeding stock.

Petroleum is the greatest single factor in Curaçao's present-day activity, and one of the largest refineries in the world is maintained on the island. The crude petroleum is brought over in tank barges from the rich Venezuelan field around Lake Maracaibo. The numerous refined products are shipped from Curaçao to various parts of the world.

Note: For information about Curaçao see "A Modern Saga of the Seas," *National Geographic Magazine*, December, 1931. For other possessions of the Netherlands see "The Greatest Voyage in the Annals of the Sea," December, 1932; "Island of Nias, at the Edge of the World," August, 1931; "Among the Hill Tribes of Sumatra," February, 1930; "Through Java in Pursuit of Color," and "Into Primeval Papua by Seaplane," September, 1929; "Artist Adventures on the Island of Bali," March, 1928; "Around the World in the *Islander*," February, 1928; "Stalking the Dragon Lizard on the Island of Komodo," August, 1927; and "Columbus of the Pacific," January, 1927.

Bulletin No. 2, October 22, 1934.



Photograph by Thomas F. Lee

WILLEMSTAD'S WATERFRONT REVEALS ITS DUTCH ANCESTRY

Even the largest steamers may sail into the protected harbor of Curaçao's chief and only city. The principal island of the Dutch West Indies, Curaçao owes its commercial importance to the rich oil fields of northern South America, for which it is a refining and distributing center.

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Hameln, City of the Pied Piper

NEARLY 700,000 German peasants and city dwellers assembled on Bueckeburg Hill, near Hameln (Hamelin), recently to celebrate the second annual National Socialist harvest festival, and to listen to an address by Chancellor Hitler.

This huge gathering, one of the largest in history, must have taxed the resources and facilities of the quaint little city, which has not changed a great deal since the day, six and a half centuries ago, as the legend has it, that a spiteful musician lured away the children of Hameln because the town fathers bickered over his bill for having rid Hameln of a plague of rats.

Last June Hameln marked the 650th anniversary of the legendary event with a grand homecoming of all living "children and children's children" of the town, and even let bygones be bygones to the extent of dedicating a Pied Piper monument on June 26th.

Chocolate Rats at the "Ratcatcher's House"

Although modern Hameln has a few industries and busy salmon fisheries along the River Weser, it still retains many richly ornate houses and quaint, narrow streets that hark back to the days of its rat-catching legend, immortalized in Browning's ballad, "The Pied Piper of Hamelin."

Along one of its gabled byways stands the beautifully ornamented stone *Rattenfänger-Haus*, or "Ratcatcher's House." It dates from 1602 and, therefore,

the National Park Service, with the cooperation of C. C. C. tree troopers, has built an automobile tow runway 1,500 feet long and 100 feet wide, and erected temporary canvas hangars.

As soon as the Commonwealth of Virginia turns over the Park to the Federal Government—a formality which is expected to take place soon—cabins and camp sites will probably be provided for those wishing to remain in the vicinity while awaiting favorable weather and air conditions for the many special types of soaring or gliding.

That part of the Blue Ridge which stretches from the North Carolina line to central Pennsylvania in almost unbroken formation creates uplifting air currents along its crest excelling those so far found in any other like distance. The prevailing westerly winds rush across the Valley, then climb the Blue Ridge and sweep over its summit on their way to the seaboard. Gliders paralleling the crest of these great air waves might bump along in a north-easterly direction from north-central Virginia far into eastern Pennsylvania.

"Wind Gaps" Have Seen History

The so-called "wind gaps" that break the crest between the Lincoln Highway in Pennsylvania and the Midland Trail in Virginia figured largely in the Civil War. It was through them that the Army of the Potomac, led by McClellan and Meade, and the Army of Northern Virginia, led by Robert E. Lee, played the game of hide and seek that shifted the fortunes of war to Antietam and Gettysburg, and back again to The Wilderness, Cold Harbor, and Petersburg.

Through these great gaps to-day such roads as the Lincoln Highway (U. S. 30), the National Old Trails (U. S. 40), the Lee Highway (U. S. 50), the Spottswood Trail (Va. 4), and the Jefferson Highway (Va. 5) carry motorists between the West and the Seaboard.

These great gaps played their rôle in the history of ages gone by. They are

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South the Great Trunk Road goes, 349 miles to Dodoma, upland center of Tanganyika, curving westward as it runs around the foothills of Mt. Kilimanjaro, 19,328 feet, and Africa's highest. Six hundred miles more bring the traveler to Abercorn, at the lower end of Lake Tanganyika, 600 wicked miles that constitute the weakest link in the trans-African chain.

A Belgian Mining Eldorado in the Jungle

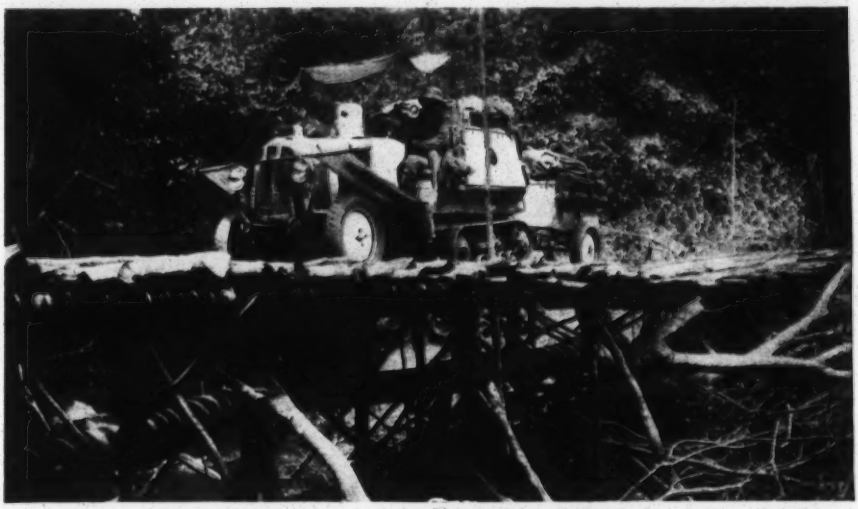
Once across the border into Belgian Congo the motorist breathes a sigh of relief, because Belgium, reaping millions from her copper, nickel, vanadium, tin, and radium mines, can and has afforded good roads through the wilderness around Elizabethville, which, with its theaters, parks, clubs, a cathedral and a public library, is the capital of a mining Eldorado. Again the driver turns toward British territory; N'dola, Bwana M'kubwa, and the railroad-mining center of Broken Hill, a hot, dusty ride over a dim trace, 946 miles.

Civilization begins to press a deeper mark as first, Northern Rhodesia, and then Southern Rhodesia, slip by; Livingstone, with trolley lines and regattas, then Victoria Falls, broader than Niagara and twice as high. Next, Wankie with its coal mines, Bulawayo, whose 11,818 white people will be more than the passenger has seen since Europe, and finally Pietersburg, Pretoria, the administrative capital of the Union of South Africa (Cape Town is the legislative capital), and Johannesburg, the town that keeps the world supplied with new gold. From Broken Hill to Johannesburg is a drive equivalent to motoring from New York to Chicago over secondary roads of concrete, asphalt and gravel.

Two routes are open south of Johannesburg, a long one, 1,500 miles to Durban on the sea, following the coast through Port Elizabeth and Mossel Bay; a short, less picturesque route, 1,000 miles, through Kimberley, with its big pits dug for little diamonds, and across the serrated highlands to Cape Town, huddling below Table Mountain.

Note: For additional African material, including reports of those who have made motor or air journeys into the heart of the continent, see: "Three-Wheeling Through Africa," *National Geographic Magazine*, January, 1934; "Sailing Forbidden Coasts," September, 1931; "Under the South African Union," April, 1931; "Seeing the World from the Air," March, 1928; "Through the Deserts and Jungles of Africa by Motor," June, 1926; "Cairo to Cape Town, Overland," February, 1925; and "African Scenes from the Equator to the Cape," October, 1922.

Bulletin No. 3, October 22, 1934.



Photograph from the Citroën Central African Expedition

MOTORING IN AFRICA IS NOT WITHOUT ITS THRILLS!

A temporary, and somewhat shaky, wooden bridge erected across a Belgian Congo stream for the Citroën Central African Expedition, which crossed Africa a decade ago with tractor cars and trailers. To-day many such streams are bridged with modern steel or concrete structures, and hundreds of miles of passable road have been cut through equatorial forests.

the fossil fragments of canyons of ancient rivers that were beheaded by such streams as the Shenandoah River.

The Knights of the Golden Horseshoe

It was to the top of the Blue Ridge at Swift Run Gap (between Fredericksburg and Harrisonburg) that Governor Spottswood and his gallant "Knights of the Golden Horseshoe" journeyed for their first sight of the fertile Shenandoah Valley.

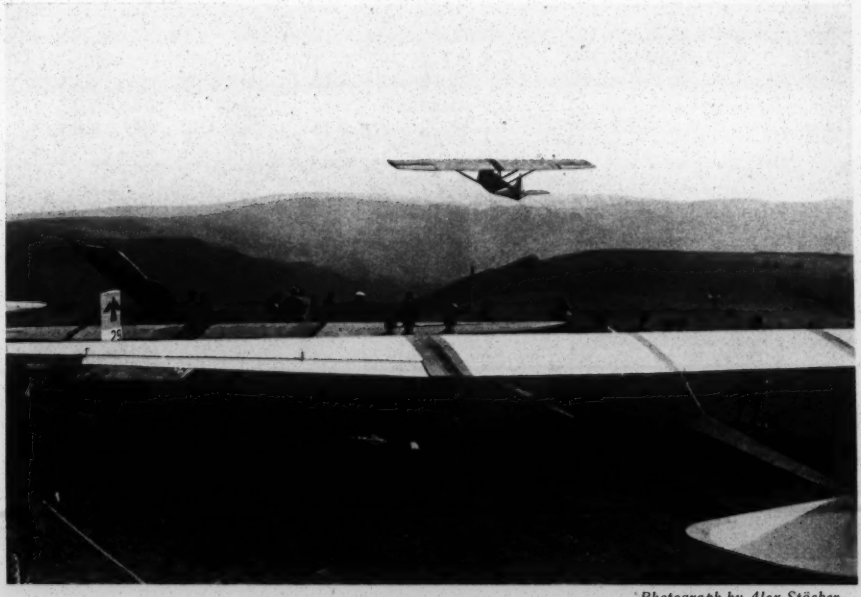
George Washington, as a boy of eighteen, made his first trip to and from the Valley on horseback through Ashbys and Snickers Gaps (between Washington, D. C., and Winchester).

Waynesboro, which last year witnessed the start of the flight that broke the American gliding record, is a busy little rayon manufacturing town with several fashionable prep and military schools near-by.

Note: For other data about powerless flight, and areas where gliding is practicable, see: "On the Wings of the Wind," *National Geographic Magazine*, June, 1925; "Patriotic Pilgrimages to Eastern National Parks," June, 1934; "New York—an Empire within a Republic," November, 1933; "Travels of George Washington," January, 1932; "Virginia—A Commonwealth That Has Come Back," April, 1929; "Air Conquest," August, 1927; and "Exploring the Atlantic Seaboard with a Color Camera," May, 1926.

Back copies of the *National Geographic Magazine* may be consulted in the bound volumes of your school or local library.

Bulletin No. 5, October 22, 1934.



Photograph by Alex Stöcker

OFF ON THE WINGS OF THE WIND!

At German flying camps, such as the one shown above, gliders of every size and type may be seen on days suitable for ascents. The ground crew (not visible) has just launched a Prüfling sail plane with an elastic rope, and the wings of the little ship have caught ascending currents of air rushing up the slope. This part of Germany, the Rhön Mountains, presents air conditions somewhat similar to those of Virginia's Blue Ridge, site of the new National Glider Camp of the National Park Service.